To enhance global sustainability, we must promote high density urban environments. However, urban density can increase human exposure to environmental pollution and reduce residents access to environmental goods such as green spaces. In an effort to understand how urban vegetation influences residents’ mental health in urban environments, Taylor et al., 2015 investigated the association between street tree density and antidepressant prescription rates in 31 boroughs throughout London, UK. After controlling for socioeconomic indicators, the researchers determined that boroughs with higher street tree densities had lower antidepressant prescription rates. While careful to note that their study investigated association and not causation and did not address the problem of the ecological fallacy, the researchers concluded by identifying the need to extend this research to other urban settings and control for the impacts of density.

Our research seeks to understand the relationship between urban density, mental health, and urban vegetation. We use census tract data from the largest 500 cities in the USA, incorporating new information on mental health at the census tract level from the Centers for Disease Control (2014, 2015) and vegetation cover (National Land Cover Database, 2011). Controlling for socioeconomic status and other relevant factors, we use a non-linear statistical analysis to quantify the independent effects of density and presence of vegetation to investigate the relative importance of each on mental health well-being. Additionally, we use propensity score matching as a secondary control for covariates to isolate the effect of population density and provide a direct comparison between high and low density tracts. Finally, we use data envelope analysis to determine the best and worst performing census tracts in the study. This step identifies census tracts of greatest concern. Sustainable cities must seek to strike the balance between global sustainability and local livability through urban design and planning interventions. This research investigates one important intervention.